

## CLAIMS

1. A substantially constant intensity light source comprising:  
functional circuitry, said functional circuitry comprising a switching power supply;  
at least one signal, said signal a matrix of LEDs connected in series and parallel  
and configured for redundancy; and  
a monitoring circuit, said monitoring circuit comprises a current sense circuit;  
wherein said current sense circuit provides feedback control of a non-linear load.
2. The light source of claim 1 wherein the current sense circuit comprises an  
amplifier comprising circuit an amplifier and at least one resistor in series with the  
amplifier and a power converter circuit the current sense circuit senses the current of a  
flyback diode and recovers the dc component of the waveform via a low pass filter.
3. The light source of claim 2 wherein the power converter circuit includes a current  
sense transformer.
4. The light source of claim 2 wherein the current sense circuit further comprises a  
pole that is independent of pole  $C7/R_{load}$  variations.
5. The light source of claim 4 wherein the current sense circuit the voltage ripple  
across a first capacitor in the amplifier is independent of the second capacitor in a power  
converter circuit.
6. The light source of claim 5 wherein the second capacitor is less than 500  $\mu F$ .
7. The light source of claim 5 wherein the LEDs are selected from the group  
consisting of red LEDs, green LEDs or yellow LEDs.
8. The light source of claim 5 further comprising one a first signal comprising a  
matrix of red LEDs connected in series and parallel and configured for redundancy, a  
second signal comprising a matrix of yellow LEDs connected in series and parallel and  
configured for redundancy, a third signal comprising a matrix of green LEDs connected in  
series and parallel and configured for redundancy.
9. The light source of claim 5 wherein the amplifier increases the output current to  
compensate for light reduction of LEDs at higher temperatures.

10. The light source of claim 1 wherein the amplifier comprises a thermistor and at least one resistor having a resistivity that decreases above 25°C.
- 5 11. The light source of claim 1 wherein the amplifier gain is reduced and the current across resistor  $R_s$  is increased.
12. The light source of claim 7 wherein the LEDs are yellow and the amplifier connected in parallel a first, second, third, fourth, fifth resistor are connected, the first  
10 resistor is connected in parallel with the second, third, fourth and fifth resistors, the second, fourth and fifth resistors are connected in series, the third resistor is connected in parallel with the second resistor and the capacitor and resistor  $R_s$  are connected in series with the amplifier.
- 15 13. The light source of claim 7 wherein the LEDs are red and the amplifier is connected in parallel with a first, second and third resistor and the first resistor is connected in parallel with the third resistor and in series with the second resistor and the second capacitor and Resistor  $R_s$  are connected in series with the amplifier.
- 20 14. The light source of claim 7 wherein the LEDs are green and the amplifier is connected in parallel with a first, second, third, fourth and fifth resistor, the first resistor is connected in series with the second and fourth resistor and in parallel with the third and fifth resistor and second capacitor and Resistor  $R_s$  are connected in series with the amplifier.